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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/728,506	12/01/2000	Daniele Bagni	99AG29853254	4216

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EXAMINER

DASTOURI, MEHRDAD

ART UNIT	PAPER NUMBER
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2623

10

DATE MAILED: 03/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/728,506

Applicant(s)

BAGNI ET AL.

Examiner

Mehrddad Dastouri

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10-40 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 10-40 is/are rejected.
- 7) ☒ Claim(s) 12, 15, 16, 23, 26, 27, 34, 37 and 38 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>6</u> | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 10-40 are rejected under 35 U.S.C. 112, second paragraph.

Claims 10, 20 and 31 recite the limitation "each macroblock" in Lines 11, 11 and 12, respectively. There are insufficient antecedent bases for these limitations in the claims.

Claims 11, 22 and 33 recite the limitation "the top threshold of the top half-frames and the bottom half-frames" in Lines 7 and 8. There are insufficient antecedent bases for these limitations in the claims.

Claims 11, 22 and 33 recite the limitation "the bottom threshold of the top half-frames and the bottom half-frames" in Lines 11 and 12. There are insufficient antecedent bases for these limitations in the claims.

Claims 15, 26 and 37 recite the limitation "the third and sixth numbers" in Line 19. There are insufficient antecedent bases for these limitations in the claims.

Claims 15, 26 and 37 recite the limitation "the forth and fifth numbers" in Line 21. There are insufficient antecedent bases for these limitations in the claims.

Claims 17, 28 and 39 recite the limitation "each elaborated picture" in Lines 3-4, and 7-8. There are insufficient antecedent bases for these limitations in the claims.

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Claim 38 recites the limitation "the second and the first ratios for producing a fifth ratio" in Lines 3 and 4. There are insufficient antecedent bases for these limitations in the claims.

Claim 38 recites the limitation "the third and the forth ratios for producing a sixth ratio" in Lines 5 and 6. There is insufficient antecedent basis for this limitation in the claim.

Claim 38 recites the limitation "said eighth sub-module" in Line 9. There is insufficient antecedent basis for this limitation in the claim. Claims not referred to are dependent on the rejected claims.

Drawings

3. Figures 1-5 in formal drawings submitted January 8, 2001 are labeled "prior art". Applicants are respectfully requested to submit a copy of the patents or printed publications that include these figures and resulted in labeling these drawings as prior art.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 10, 13, 14, 18-21, 24, 25, 28-32, 35, 36, 39 and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Yonemitsu et al (EP- 0 573 665 A1).

Regarding Claim 10, Yonemitsu et al disclose a method for processing a bitstream of coded data of video sequences of progressive or interlaced pictures, the method comprising:

estimating motion vectors of groups of pixels belonging to a top half-frame of a current picture in relation to pixels belonging to a bottom half-frame of a preceding picture (Figures 15, 16, 18, 19 and 25; Page 8, Lines 34-49; Page 10, Lines 40-58, Page 11, Lines 1-6);

estimating motion vectors of groups of pixels of a bottom half-frame of the current picture in relation to pixels belonging to the top half-frame of the current picture (Figures 15, 16, 18, 19 and 25; Page 8, Lines 34-49; Page 10, Lines 40-58, Page 11, Lines 1-6);

calculating for each macroblock of the top half-frame and the bottom half-frame a respective top motion coefficient and a bottom motion coefficient based upon the estimation of the motion vectors of the top half-frame and the bottom half-frame Figure 25; Page 11, Line 28 to Page 13, Lines 1-7); and

recognizing the current picture as an interlaced picture by a substantial equality of a distribution of values of the motion coefficients, or as a progressive picture by a substantial inequality of the distributions of values of the motion coefficients (Figure 25; Page 13, Lines 8-32; Tables 1 and 2).

Regarding Claim 13, Yonemitsu et al further disclose a method according to Claim 10 wherein recognizing comprises:

calculating a pair of first and second shape coefficients representing distributions of the top and bottom motion coefficients, respectively (Page 13, Formula (1), size R of the vector MV has two components R_x and R_y);

wherein recognizing the current picture a progressive picture or an interlaced picture is based upon whether the shape coefficients differ by a quantity greater or lower than a certain value, respectively (Page 13, Lines 21-26).

Regarding Claim 14, Yonemitsu et al disclose a method according to Claim 10 wherein recognizing further comprises:

calculating a coefficient representing a stochastic correlation between distribution of the top and bottom motion coefficients (Page 13, Lines 8-13; Formula (1));

wherein recognizing the current picture a progressive picture or an interlaced picture is based upon whether the calculated coefficient exceeds a certain value (Page 13, Lines 14-32).

Regarding Claim 18; Yonemitsu et al further disclose a method according to Claim 10 further comprising calculating motion vectors of a picture of the video sequences using a Frame-Prediction technique if the current picture is recognized as a progressive picture or using a Field-Prediction technique if the current picture is recognized as an interlaced picture (Page 13, Lines 21-32. Frame-Prediction technique is the fundamental methodology for processing a progressive picture, and Field-Prediction technique is the fundamental methodology for processing an interlaced picture.).

Regarding Claim 19, Yonemitsu et al further disclose a method according to Claim 10 wherein the video sequences are processed according to an MPEG standard (Figures 1 and 2).

With regards to Claims 20/21 and 31/32, arguments analogous to those presented for Claim 10, are applicable to Claims 20/21 and 31/32.

With regards to Claims 24 and 35, arguments analogous to those presented for Claim 13, are applicable to Claims 24 and 35.

With regards to Claims 25 and 36, arguments analogous to those presented for Claim 14, are applicable to Claims 25 and 36.

With regards to Claim 29, arguments analogous to those presented for Claim 18, are applicable to Claim 29.

With regards to Claims 30 and 40, arguments analogous to those presented for Claim 19, are applicable to Claims 30 and 40.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 11, 22 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yonemitsu et al (EP- 0 573 665 A1) in view of Cho (U.S. 5,929,915).

Yonemitsu et al do not explicitly disclose further limitations of Claim 11.

As best understood by the Examiner, Cho discloses an encoding method and device for interlaced and progressive pictures comprising:

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comparing the top motion coefficients with a top threshold and comparing the bottom motion coefficients with a bottom threshold (Figure 2; Column 5, Lines 9-44);

counting the motion vectors having motion coefficients lower than the top threshold of the top half-frames and the bottom half-frames of the current picture for producing a pair of first and second coefficients (Figures 2 and 3; Column 5, Lines 31-67, Column 6, Lines 1-50); and

counting the motion vectors whose motion coefficients are greater than the bottom threshold of the top half-frames and the bottom half-frames of the current picture for producing a second pair of third and fourth coefficients (Figures 2 and 3; Column 5, Lines 31-67, Column 6, Lines 1-50; Column 7, Lines 31-50);

wherein recognizing the current picture as progressive picture or an interlaced picture is based upon the first, second, third and fourth coefficients relative to the current picture and to the preceding pictures (Tables 1 and 2; Column 2, Lines 41-57; Figures 4A and 4B; Column 9, Lines 17-67, Column 10, Lines 1-21).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Yonemitsu et al.'s invention according to the teachings of Cho to implement further limitations of Claim 11 because it will expedite recognition processing and will reduce computation time and stages.

With regards to Claims 22 and 33, arguments analogous to those presented for Claim 11 are applicable to Claims 22 and 33.

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8. Claims 17, 28 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yonemitsu et al (EP- 0 573 665 A1) in view of Wu (U.S. 2003/0161404).

Yonemitsu et al do not explicitly disclose further limitations of Claim 17.

As best understood by the Examiner, Wu discloses a moving picture coding and decoding method and apparatus comprising:

calculating a temporary weight value for each elaborated picture as a function of a result of recognizing the current picture as a progressive or interlaced picture (Paragraphs 0147-0151); and

calculating a final weight value for each elaborated picture as a function of the temporary weight value relative to the current picture and of final weight values relative to preceding pictures (Paragraphs 0152-0160);

wherein recognizing the current picture as a progressive or an interlaced picture depends on the temporary weight value relative to the current picture and on the final weight values relative to preceding pictures (Paragraphs 0151-0160).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Yonemitsu et al.'s invention according to the teachings of Wu to implement further limitations of Claim 17 because it will expedite recognition processing and will reduce computation time and stages by differentiating frame-based and field-based processing. .

With regards to Claims 28 and 39, arguments analogous to those presented for Claim 17 are applicable to Claims 28 and 39.

Allowable Subject Matter

9. Claims 12, 15, 16, 23, 26, 27, 34, 37 and 38 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and rewritten to overcome the 35 U.S.C. 112, second paragraph rejection set forth in the Office Action.

Claim 12 of the instant application recites a method according to Claim 10 wherein the calculated values of the top and bottom motion coefficients are used to perform a preliminary test comprising:

summing the motion coefficients of macroblocks belonging to the top half-frame of the current picture for producing a top sum coefficient;

summing the motion coefficients of macroblocks belonging to the bottom half-frame of the current picture producing a bottom sum coefficient; and

defining the current picture as a progressive picture if the top sum coefficient and the bottom sum coefficient are lower than respective pre-established first and second positive numbers, otherwise proceeding with recognizing the current picture as an interlaced picture by the substantial equality of the distributions of values of the motion coefficients or as a progressive picture by the substantial inequality of the distributions of values of the motion coefficients.

Claim 15 of the instant application recites a method according to Claim 11 further comprising:

calculating a first ratio between the first coefficient relative to the current picture and the second coefficient relative to the preceding picture;

calculating a second ratio between the second coefficient relative to the current picture and the first coefficient relative to the current picture;

calculating a third ratio between the third coefficient relative to the current picture and the fourth coefficient relative to the preceding picture;

calculating a fourth ratio between the fourth coefficient relative to a current picture and the third coefficient relative to the current picture; and

comparing the first, second, third and fourth ratios with respective pre-established third, fourth, fifth and sixth positive numbers recognizing the current picture as a progressive picture if the first and fourth ratios are lower than the third and sixth numbers, respectively, and if simultaneously the second and third ratios are greater than the fourth and fifth numbers, respectively.

Claims 23 and 26 recite analogous methodology as recited in Claims 12 and 15, and are therefore allowable.

Claims 34 and 37 recite the processor for implementing the method Claims 12 and 15, and are therefore allowable.

Claims 16 and 27 depend on Claims 15 and 26, respectively, and are therefore allowable.

Claim 38 recites allowable subject matter analogous to Claim 16, and is therefore allowable.

Other prior art cited

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 6,115,070 to Song et al;

U.S. Patent 6,501,799 to Kohn;

U.S. Patent 5,461,420 to Yonemitsu et al.

Contact Information

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mehrdad Dastouri whose telephone number is (703) 305-2438. The examiner can normally be reached on Monday to Friday from 8:00 a.m. to 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703) 308-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MEHRDAD DASTOURI
PRIMARY EXAMINER

Mehrdad Dastouri

Mehrdad Dastouri
Primary Examiner
Art Unit 2623
March 6, 2004